



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/529,252 | 03/25/2005 | Shouji Kajita | 040894-7211 | 4471 |
| 9629 7590 11/06/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004 | | | | |
| EXAMINER | | | | |
| MARC, MC'DEUNEL | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 3664 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 11/06/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,252

Applicant(s)

KAJITA ET AL.

Examiner

MCDIEUNEL MARC

Art Unit

3664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/16/25009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/6/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Claims 1-3 are pending for examination.
2. The rejection to claims 1-3 under 35 U.S.C. 102(e) as being anticipated by admitted prior art Takenaka (U.S. Pat. No. 6,301,524) is withdrawn.
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art Takenaka (U.S. Pat. No. 6,301,524).

6. As per claim 1, Takenaka teaches gait pattern generating device of a walking robot for generating a gait pattern from a desired ZMP trajectory using ZMP preview information (see col. 7, lines 7-33 and Fig. 45, wherein previous gait generation pattern transfer from gait mixer into "mixed gait instantaneous value generator), wherein a driving quantity of the center of gravity in one moment is determined on the basis of a fed-back motion state (see col. 5, lines 41-54, wherein motion has been considered as displacement) of the center of gravity in the moment and a previewed or planned future ZMP trajectory, so as to generate a walking motion in real time (see col. 6, 38-51 and abstract and col. 8, line 38 – to – col. 9, line -11); a table-cart model is used for simplifying a characteristic of the walking robot (see col. 7, lines 7-33, figs. 1, 45 and fig. 48, particularly element S2206); and the fed-back motion (see title wherein the gait generation automatically contains feedback motion in order to generate continuous motion pattern into the robot's joints, col. 5, lines 41-54, col. 6, lines 38-51, and abstract), of a cart of the table-cart model (table-cart model has been taken as parts of the robot such as the trunk the legs *etc.*) in which the cart corresponds to the center of gravity (see col. 5, lines 36-40, col. 5, lines 41-54, col. 6, 38-51 and abstract and col. 8, line 38 - to - col. 9, line - 11). Takenaka does not explicitly teach a time-derivative of acceleration.

Takenaka teaches implicitly a locomotion pattern which requires acceleration, and time-series data which has been considered being replaced by time-deviation based on design choice (see col. 1, line 22-50, note that time-series has been taken a mathematical function, therefore it could be replaced by another mathematical function such as a time-derivative by design choice).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to elaborate on Takenaka's robot, because this elaboration would have introduced time-series which has been taken a mathematical function, and provided rational on how it could be replaced by another mathematical function such as time-derivative, thereby improving the efficiency and the reliability of the gait pattern generating device of walking robot.

7. **As per claim 2, Takenaka** teaches gait pattern generating device of a walking robot using ZMP preview information wherein the walking robot is a bipedal walking robot (see col. 42-53).

As per claim 3, Takenaka teaches gait pattern generating device of a walking robot using ZMP preview information, wherein the previewed or planned future ZMP trajectory is corrected based on a detailed dynamical model of the robot in addition to a basic model (see abstract and col. 24, lines 19-27).

As per claim 4, Takenaka teaches a gait pattern wherein a table-cart model is used for simplifying a characteristic of the walking robot (see col. 7, lines 7-33 and Fig. 45, wherein previous gait generation pattern transfer from gait mixer into "mixed gait instantaneous value generator as noted above), and the feedback motion is determined based on a time derivative of acceleration of a cart of the table-cart model in which the cart corresponds to the center of gravity (see col. 5, lines 41-54, col. 6, 38-51 and abstract and col. 8, line 38 – to – col. 9, line - 11).

Response to Arguments

8. As to the reference not teaching a time-derivative of acceleration (see col. 1, line 22-50, note that time-series has been taken a mathematical function, therefore it could be replaced by another mathematical function such as a time-derivative by design choice) of a cart (table-cart model has been taken as parts of the robot such as the trunk the legs *etc.*); As to the reference not teaching “a gait generation pattern from a ZMP using ZMP preview information” (see col. 7, lines 7-33 and Fig. 45, wherein previous gait generation pattern transfer from gait mixer into “mixed gait instantaneous value generator).

As to the reference not teaching “a driving quantity of the center of gravity in one moment is determined on the basis of a feed-back motion state of the center of gravity in the moment and a previewed or planned future ZMP trajectory” has been considered as reason of difficulty (see col. 6, lines 38-67 and col. 8, line 38 – to – col. 9, line -11).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MCDIEUNEL MARC whose telephone number is (571)272-6964. The examiner can normally be reached on 6:30-5:00 Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Khoi Tran can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/McDieunel Marc/
Examiner, Art Unit 3664
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664